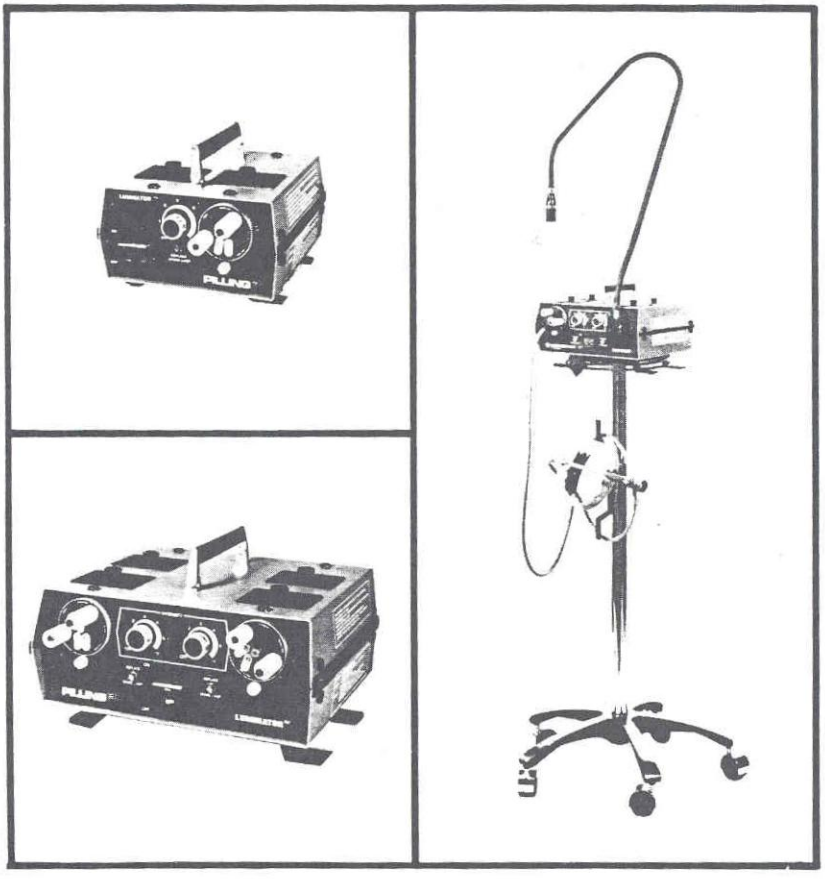
Owner's Manual

Pilling LUMINATOR™ Fiber Optic Light Sources

Dual and Single Models



PILLING

Models: Dual Illuminator

52-1201	120 VAC
52-1202	240 VAC
52-1203	100 VAC

Single Illuminator

52-1211	120 VAC
52-1212	240 VAC
52-1213	100 VAC

This Manual is Part No. 300431

WARRANTY

Pilling warrants its illuminators to be free from defects in material or workmanship for a period of 18 months from the date of delivery from our factory when used under normal service and conditions. Lamps and consumable parts are excluded.

Pilling liability under this warranty shall be limited to the replacement or repair of the instrument F.O.B. Fort Washington, Pennsylvania.

THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EITHER EXPRESSED OR IMPLIED, AS TO DESCRIPTION, QUALITY, MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OF USE, OR ANY OTHER MATTER.

Pilling shall not be liable to a customer for any special, indirect or consequential damages arising from the sale or use of its products.

LIMITED COPYRIGHT RELEASE:

Owners of Pilling fiber optic light sources may copy appropriate sections of this manual for use in personnel training or servicing the light sources.

INTRODUCTION

Thank you for your confidence in choosing the Pilling LUMINATOR™ fiber optic light source. It provides mobile, high-intensity light for various medical procedures.

This manual contains all you need to know to operate and maintain the dual and single illuminators. It will help you take full advantage of the unique features designed into each illuminator to meet the real needs of today's medical procedures.

Some of these features are:

1. The intensity control knob(s) allow for a wide range of lamp intensity and permit fan cooling of the lamp(s) in the OFF position.

2. The multiport faceplate accommodates the five most common fiber optic cables used in medical applications.

3. Up to four fiber optic devices can be used simultaneously on the dual unit and two on the single unit, depending on cable end fittings.

4. The spare lamp cartridge(s) permit snap-in replacement of a burned-out lamp in seconds.

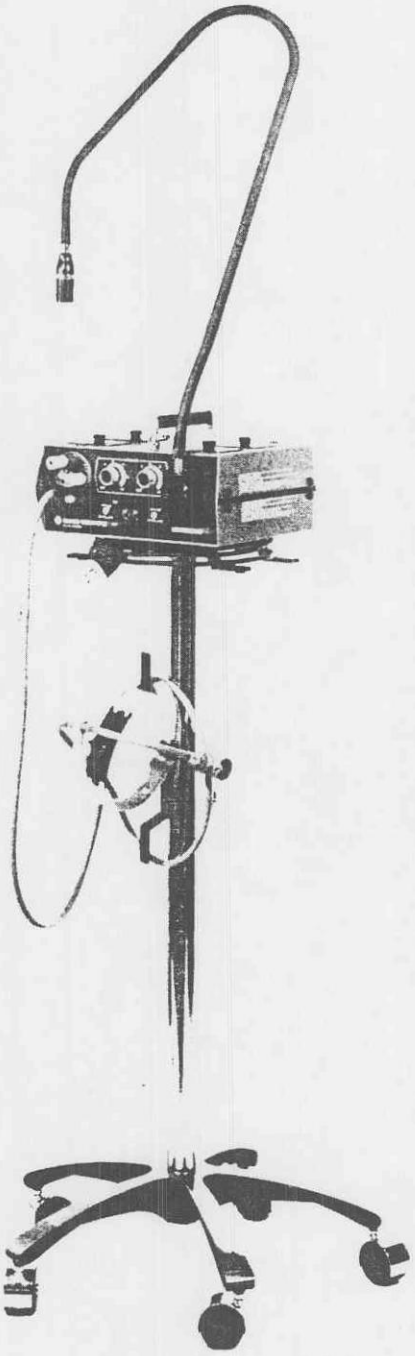


TABLE OF CONTENTS

Page numbers

LIST OF FIGURES

PRECAUTIONS

PILLING illuminators are sturdy and safe devices. Reasonable attention to the common-sense precautions listed here will protect the patient and operator from injury and the equipment from damage.

TO PROTECT THE PATIENT AND OPERATOR:

1. Avoid looking into the empty cable port when the illuminator is on.

2. Avoid long exposure of tissue to bare fiber-optic cable ends during use.

3. Read and abide by the safety precautions suggested for the use of any fiber-optic instrument.

4. Cool the illuminator after use by letting the fan run for 5 minutes with the lamp turned off. (This may also prolong component life.)

5. Do not use the illuminator below the 5-foot level in the presence of flammable anesthetics.

6. Plug the illuminator only into grounded, hospital-grade receptacles.

TO PROTECT THE ILLUMINATOR:

1. Do not obstruct air-inlet vent (bottom) or fan-exhaust vent (rear).

2. Use the illuminator only with the voltage indicated on the rating plate.

3. Do not use the illuminator in an environment unprotected from the weather.

4. Do not steam-autoclave the illuminator or use strong organic solvents for cleaning.

1 DESCRIPTION OF THE ILLUMINATOR

1 Specifications

MODELS	**DUAL ILLUMINATOR**	**CATALOG NUMBERS**	
	120 VAC	52-1201	
	240 VAC	52-1202	
	SINGLE ILLUMINATOR	**CATALOG NUMBERS**	
	120 VAC	52-1211	
	240 VAC	52-1212	
	All models can operate on 50 or 60 Hz current.		
SIZE	**DUAL ILLUMINATOR**	**SINGLE ILLUMINATOR**	
Height	7⅝" (19.4 cm) with handle folded down	5¾" (14.6 cm) with handle folded down	
Width	12⅝" (32.1 cm)	8½" (21.6 cm)	
Depth	12¼" (31.1 cm)	10⅞" (27.6 cm)	
Weight	21 lb (9.5 kg)	11 lb (5 kg)	
Power Cord	12' (3.7 m)	10' (3.1 m)	
POWER REQUIREMENTS	**DUAL ILLUMINATOR**	**WATTS**	**AMPS**
	120 VAC	420	3.4
	240 VAC	420	1.75
	SINGLE ILLUMINATOR	**WATTS**	**AMPS**
	120 VAC	210	1.75
	240 VAC	210	0.9
GROUND LEAKAGE	Less than limits specified in U.L. 544 for hospital equipment.		
LAMP	Type DNF Projection Lamp, PILLING CATALOG NO. 52-118 (21V 150W)		
RATED LAMP LIFE	25 hours at full intensity		

These units have been designed to meet the requirements of Underwriters Laboratories and Canadian Standards Association.

2 Controls and Components

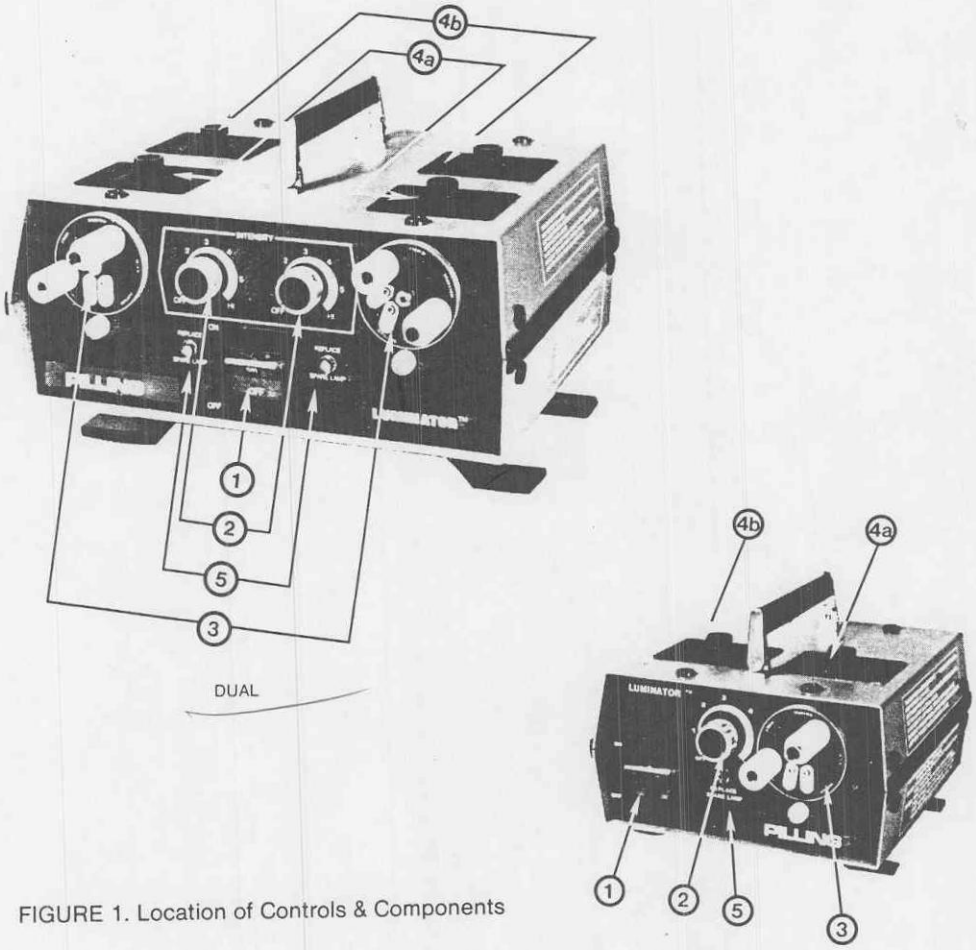
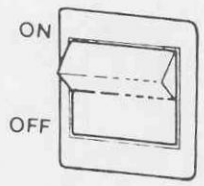


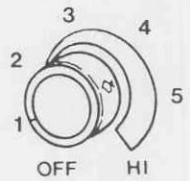
FIGURE 1. Location of Controls & Components

1. Power switch/circuit breaker.
2. Intensity control knob.
3. Multiport faceplate.
4a. Lamp cartridge (in-use).
4b. Lamp cartridge (spare).
5. REPLACE SPARE LAMP indicator.

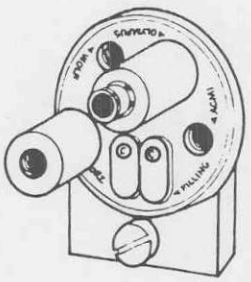
1. Power switch/circuit breaker. Pushing the switch ON applies power to the unit, illuminates the pilot light inside the switch, and activates the fan(s). The switch also functions as a circuit breaker and automatically shuts off if a short circuit occurs.



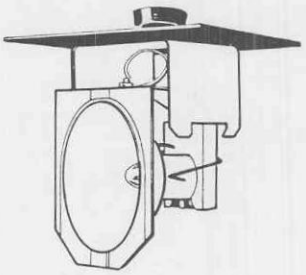
2. Intensity control knob. Turning the knob clockwise from the OFF position turns the lamp on and continuously increases the intensity of illumination.



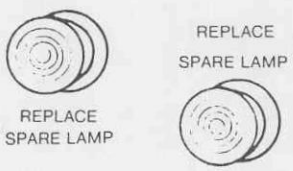
3. Multiport faceplate. Turning the multiport faceplace in either direction aligns one of the five types of ports (PILLING, ACMI, OLYMPUS, WOLF and STORZ) with the light outlet. The port at the 6 o'clock position is aligned with the light outlet and is ready for the insertion of the appropriate fiber optic cable.



4. Lamp cartridge. The lamp cartridge, in the "spare" location, can be instantly exchanged with a burned out "in-use" lamp cartridge.



5. REPLACE SPARE LAMP indicator. The REPLACE SPARE LAMP indicator lights up if the lamp in the "spare" location is missing, burned out or broken.



3. THEORY OF OPERATION

The illuminator provides a source of light for transmission through fiber-optic cables to an instrument or device which illuminates the work area. It is designed to maximize the delivery of light (visible energy) and minimize the transmission of heat (infrared energy).

The radiant energy from a tungsten-filament lamp operating on a halogen cycle is directed to an integral ellipsoidal reflector with a dichroic coating. The reflected beam, directed at the output port, contains almost all the light from the lamp, but much of the heat passes through the back of the reflector and is dissipated with the aid of an exhaust fan.

A transformer changes the input voltage from a standard power outlet to a lower voltage (21v maximum) for operating the lamp. This increases the efficiency of the light-energy collection by permitting a smaller lamp filament and precise optical ~~coil~~ design. Taps on the secondary coil of the transformer provide outputs of 16v, 17v, 18v, 19v, 20v, and 21v for varying the intensity of the lamp. The operator selects lamp intensity by means of a rotary switch.

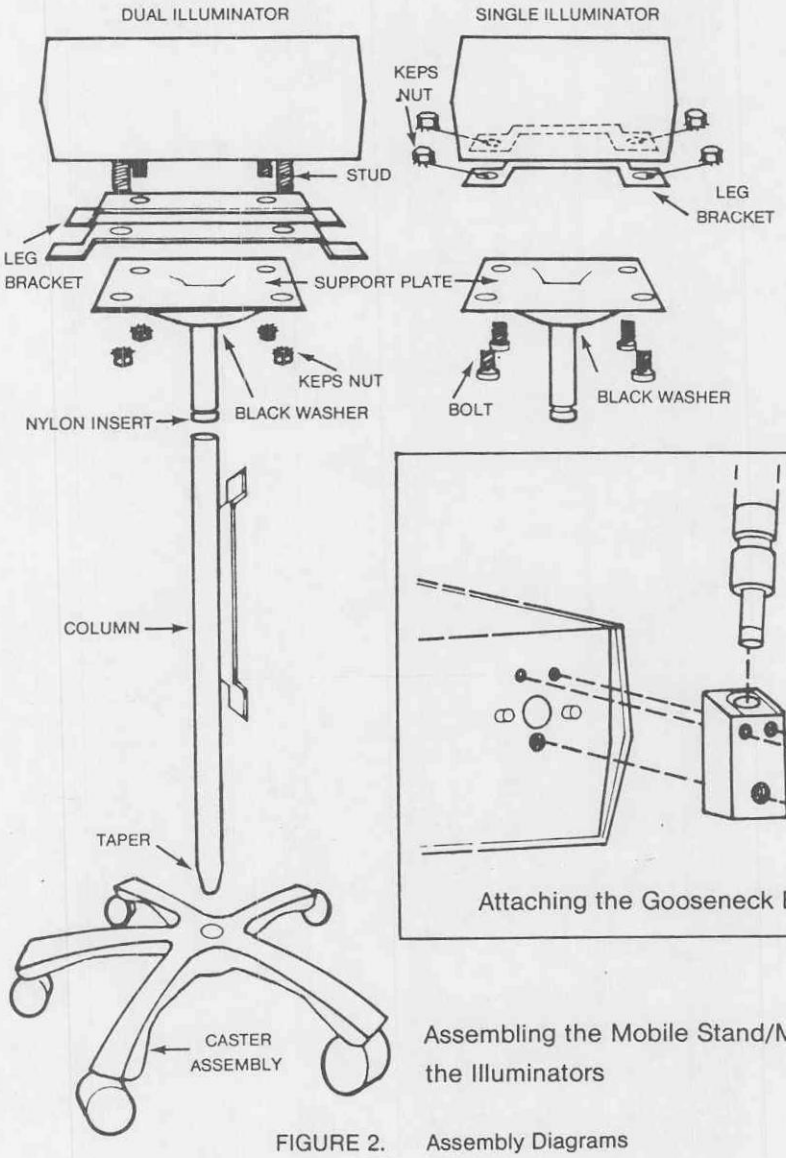
Convenience and safety features include:

* a power switch which incorporates a thermal circuit breaker
* a plug-in lamp cartridge assembly for easy lamp replacement
* an indicator light that signals a burned-out spare lamp
* an exhaust fan that operates independently of the lamp for quick cooling after use

2 ASSEMBLING OPTIONAL COMPONENTS

All systems are shipped in a single box. Separate boxes within the single package may contain:

(1) Illuminator
(2) Caster Ass'y & Support Plate
(3) Column (stand)
(4) Gooseneck Exam Light & Adapter



Attaching the Gooseneck Exam Light

Assembling the Mobile Stand/Mounting the Illuminators

FIGURE 2. Assembly Diagrams

1
Assemble the Mobile Stand (see figure 2)

1. Place the caster assembly on the floor.
2. Insert the tapered end of the column into the hole in the center of the caster assembly, turning slightly until it seats properly (i.e. doesn't turn).
   - A white nylon insert should be visible at the top of the column.

2
Mount the Support Plate to the Illuminator (see figure 2)

1. Check that the lamp cartridges are clicked securely into place.
2. Place the illuminator upside down (feet in the air) on a flat horizontal surface.
3. Attach the support plate to the illuminator.

FOR THE DUAL ILLUMINATOR:

a. Remove the four 7/16 nuts from the studs that hold the leg brackets to the dual illuminator.
   - Leave the leg brackets on the dual illuminator.

b. Using the same 7/16 nuts, attach the support plate to the illuminator.
   Note: The four nuts and bolts packaged with the support plate in a plastic bag are for mounting the single illuminator and should be ignored.

FOR THE SINGLE ILLUMINATOR:

a. Attach the support plate to the illuminator by inserting the four bolts (supplied) through the support plate and securing it to the leg brackets with the four nuts.

3
Insert the Support Plate Projection into the Column (see figure 2)

1. Remove the shipping tape from the black steel washer of the support plate.
2. Turn the complete unit with the support plate attached right side up (hold the washer if necessary) and lower the **entire** length of the support plate projection into the column. Push down to insure proper seating.
3. Wind the power cord onto the leg brackets by rotating the illuminator and feeding the cord onto the leg brackets.

4
Attach the Gooseneck Exam Light

1. Remove the multiport faceplate, if necessary, by turning the white nylon screw, directly below the light outlet, counterclockwise.
2. Align the three holes of the adapter with the three threaded holes in the illuminator.
3. Insert the two small screws (no. 10-32 x 1½") in the upper holes and the large screw (¼ - 20 x 1½") in the lower hole and tighten with a flat-blade screwdriver.
4. Insert the gooseneck into the hole in the top of the adapter, pushing down until it seats properly.

   CAUTION: The gooseneck is designed to be bent, not twisted. DO NOT TWIST the gooseneck. Twisting or torque will decrease the life of the flexible portions, causing drooping of the gooseneck and eventual breakage of the fiber optics.

3 PREPARING THE ILLUMINATOR FOR USE

1. UNPACKING

The illuminator is shipped in a cardboard container secured with reinforced paper tape. It is wrapped in a clear plastic bag enclosed top and bottom in pieces of shaped styrofoam. The power cord is coiled and wrapped with a tie.

PARTS SUPPLIED: No spare parts are supplied. (Of course the spare-lamp cartridge does contain a lamp.)

PARTS REQUIRED: The cabling required to transmit the light and instruments and devices to be lighted are not supplied.

To unpack the illuminator:

1. Cut through the paper tape, open the flaps and remove the contents.

2. Remove the styrofoam pieces from top and bottom of the illuminator.

3. Remove the plastic bag.

4. Remove the tie from the power cord.

The illuminator is ready to be connected to a standard power outlet and tested.

2 Connect to Power Outlet

The illuminator is supplied from the factory to operate at either 120 VAC or 240 VAC. **Check the rating plate on the back of the unit, then connect the unit to a power receptacle supplying the voltage specified.** Refer to section 5 to change the illuminator to the other voltage.

or 100 VAC

3 Test the Lamps

1. Push the power switch ON.
   - If a REPLACE SPARE LAMP indicator lights up, replace the lamp. (See section 5 for procedure.)
2. Turn the intensity control knob(s) to setting "1".
   - If the light outlet fails to light up, replace the lamp. (See section 5 for procedure.)
   - If the Pilling ports are at the 6 o'clock position, lift a shutter to determine if the lamp is lighting up the outlet.

   Note: If it is not possible to replace the lamp, switch the lamp cartridges, i.e. take the lamp cartridge from the "in-use" location and replace it with the lamp cartridge from the "spare" location. (See section 4 for procedure.)
3. Turn the intensity control knob(s) and the power switch OFF.

4 Connect the Fiber Optic Cable(s) to the Multiport Faceplate

Each multiport faceplate can accommodate two Pilling fiber optic cables (typically endoscopic cables) or, a Storz cable, a Wolf cable, an Olympus or Machida cable without photocontrol contact pins, or an ACMI cable.

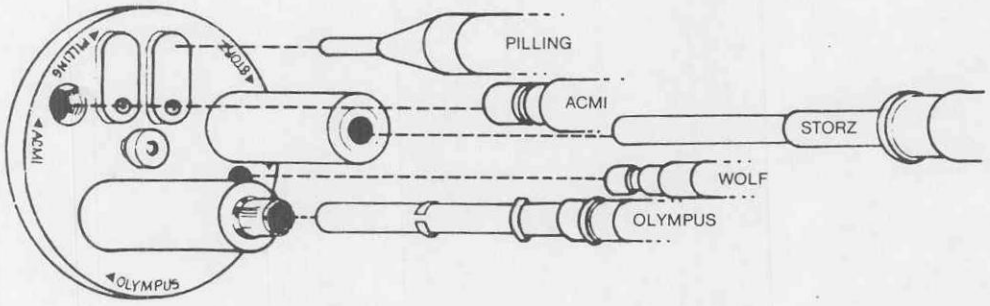


FIGURE 3. Multiport Faceplate and Fiber Optic Cable Fittings

To connect the fitting of the desired fiber optic cable to the multiport faceplate:

1. Rotate the multiport faceplate so that the desired port (PILLING, ACMI, OLYMPUS, WOLF or STORZ) is at the 6 o'clock position.
2. Insert the proximate (illuminator) end fitting of the fiber optic cable into the port, applying sufficient force to insure proper seating.
   - There is an audible click when the Olympus fiber optic cable is properly seated.
3. Attach the desired fiber optic device to the distal end of the fiber optic cable.

Prepare the Gooseneck Exam Light for Use (Option)

Attaching the exam light is described in section 2. A package of sterilized sheaths is included with the gooseneck exam light. To cover the gooseneck with a sheath:

1. USE ASEPTIC TECHNIQUE.
2. Peel open the sterilized bag and drop sheath on a sterile surface.
3. Grasp the points of the rolled sheath and slide it over the gooseneck exam light.

   Note: Replacement sheaths are available in boxes of 10 individual sterile packs as CATALOG NO. 52-1233.

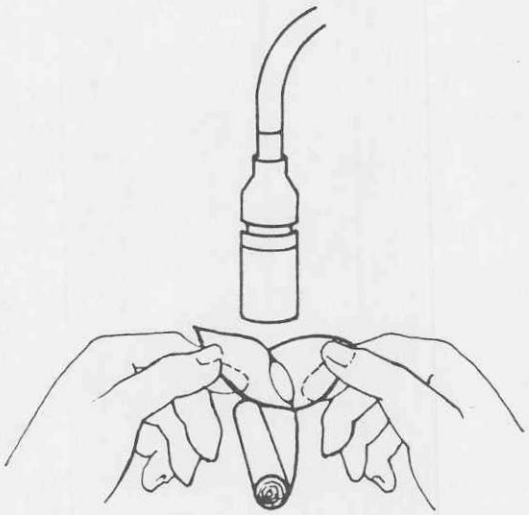


FIGURE 4
Installing Sterile Sheath

6 Operator's Checklist

*1. Is the illuminator plugged into a live outlet?

2. Are the lamps functional?

3. Have the proper fiber optic cables been inserted into the illuminator?

4. If the gooseneck exam light is being used, will you need a sterile sheath?

5. If aseptic technique is to be used, have the cable and fiber optic device been sterilized?

* If circuit breaker pilot light doesn't light, check outlet.

4 OPERATING THE ILLUMINATOR

1 Turn Illuminator On

1. Push the power switch ON.
2. Turn the intensity control knob(s) to the desired setting (clockwise to increase).

   Note: The intensity can be adjusted during a procedure by unscrubbed personnel.

2 When a Lamp Burns Out

If a lamp should burn out during a procedure, switch the defective lamp cartridge from the "in-use" location with the lamp cartridge in the "spare" location. To remove a lamp cartridge:

1. Grasp its knob on the top of the illuminator and pull up.

   WARNING: Recently used lamps are HOT. Do not touch the lamp. (See section 5)

To replace a lamp cartridge:

2. Lower it into the cartridge housing and push down until the cartridge is flush with the illuminator top.

   Note: In the single illuminator, the lamp faces to the front in the "in-use" location and to the rear in the "spare" location. In the dual illuminator, the lamps face to the front in the "in-use" and "spare" locations.

3 Turn Illuminator Off

1. Turn the intensity control knob(s) OFF.
   - Allow the fan(s) to cool the lamp(s) for 5 minutes to insure longer lamp life.
2. Push the power switch OFF.

5. STORAGE AND MAINTENANCE

1. STORAGE

The only requirements of a storage environment for the illuminator is that it be clean and dry and protected from dust and grit accumulations. A protective container (e.g., plastic bag) is recommended.

For outdoor storage, a waterproof container containing a suitable dessicant is required.

2. REQUIRED MAINTENANCE

The only maintenance required for the proper operation of the illuminator is to:

1. Keep dust from accumulating at the air vents

2. Replace expended lamps

These procedures are described below under "Clean Air Vents" and "Replace Defective Lamps." Also described are suggestions for washing, disinfecting, and sterilizing the illuminator.

3 Clean Air Vents

To assure adequate air flow through the illuminator, remove any accumulation of dust from the air vents.

1. Be sure power is OFF.
2. Brush or vacuum any accumulation of dust from the air vents on the bottom and rear of the illuminator.

4 Replace Defective Lamps

1. Remove lamp cartridge with defective lamp from the illuminator.
   WARNING: Recently used lamps are HOT. Fan cool with lamp OFF for 5 minutes before attempting lamp replacement.
2. Push the retaining clip to the right (with lamp facing you) to release the lamp.

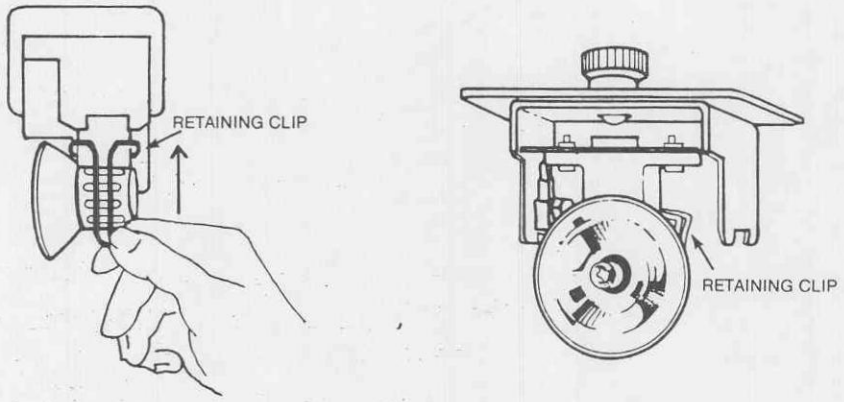


FIGURE 5. Releasing the Lamp.

3. Pull the lamp out of the cartridge and replace with type DNF, PILLING CATALOG NO. 52-1118 (21V, 150W) lamp.
4. Insert the new lamp into the cartridge and snap on the retaining clip. See figure 7.
5. Replace lamp cartridge. (To insure adequate back-up capability, cartridge with new lamp should be in "spare" location.)
6. Push power switch ON and check that the REPLACE SPARE LAMP indicator does not go on.

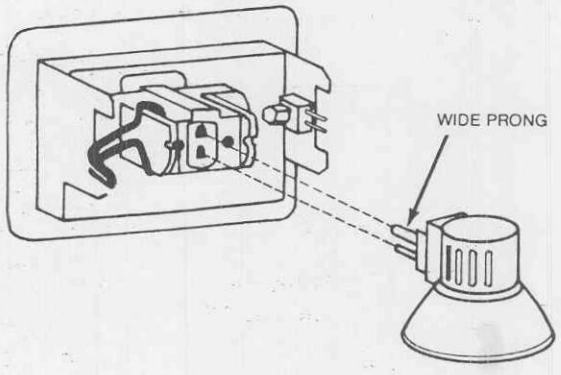


FIGURE 6. Inserting the Lamp

5. WASHING, DISINFECTING, AND STERILIZING

It may be necessary to remove contamination from the illuminator by washing. Use an iodophor or quaternary disinfectant registered by the U.S. Environmental Protection Agency. Always follow the manufacturers direction for use of any cleaning agent. Strong organic solvents may damage the painted finish.

If sterilization is required, DO NOT STEAM AUTOCLAVE. Gas sterilization is recommended using ethylene oxide. The unit should be thoroughly cleaned of dust and lint prior to gas sterilization.

6. REPAIR

Tools required: a volt-ohm meter, phillips-head and straight screwdrivers, long-nose pliers.

The labeled wiring diagrams at the end of this chapter will enable a qualified service person to trouble-shoot and repair any repairable condition. Access to the circuitry is through removal of the top cover secured by eight phillips-head screws. Replacement parts are described in the next section.

Changing the Input Voltage

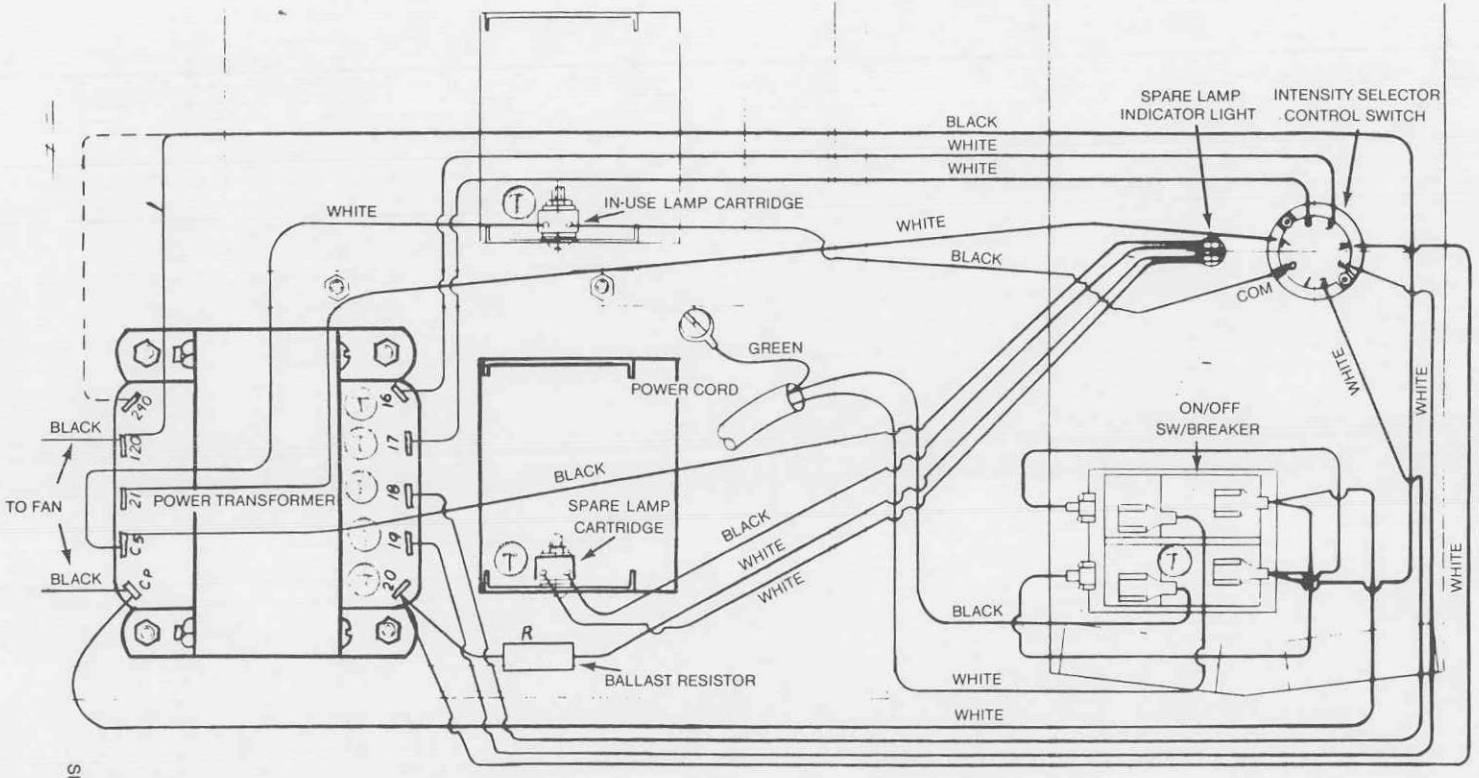
If the illuminator is wired for 120V input, changes required for 240V input are:

1. Move the wire that connects the switch/breaker to the transformer(s) from 120V tap of the transformer(s) to 240V tap.
   - On wiring diagrams, wiring into transformer tap is:
     120V — solid lines
     240V — dotted lines
2. Substitute switch/breaker part no. 300357A-002 for switch/breaker part no. 300357A-001.
3. Change the labeling on the rear of the unit to show the new voltage.

Reverse this procedure when changing from 240V to 120V.

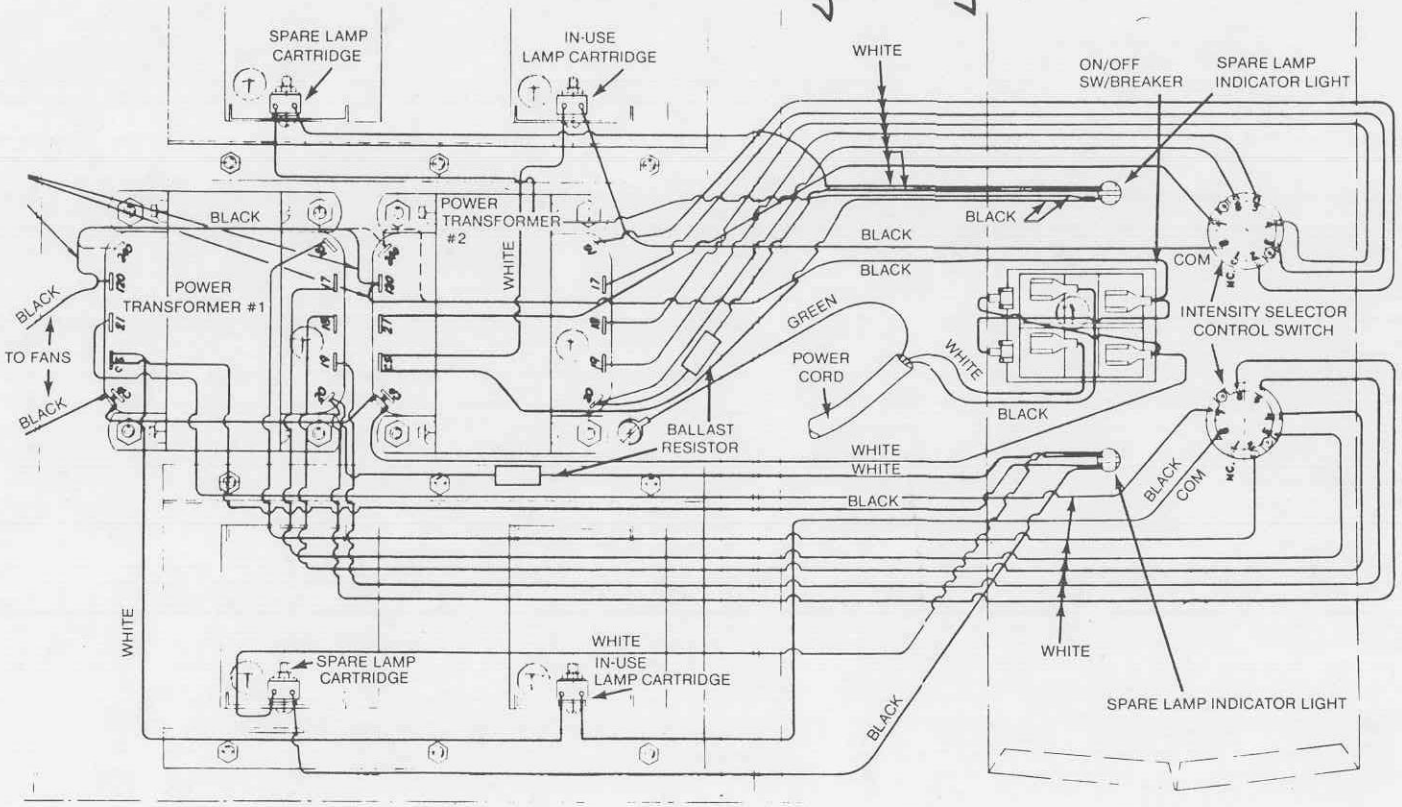
WARNING: Electrical shock hazard. The cover should only be removed by qualified electrical service personnel

Single Illuminator Wiring Diagram



T indicates test point

Dual Illuminator Wiring Diagram



Ⓣ indicates test point

all transformer taps are considered test points

REPLACEMENT PARTS AND ACCESSORIES

Replacement parts are available from Pilling authorized distributors and authorized service organizations. See wiring diagrams on pages 17 and 18 for locations.

DESCRIPTION	PART NO.
ON/OFF Switch/Breaker	120V 300357A-001 or 240V 300357A-002
Intensity Selector Control Switch	300356A
Intensity Control Knob	300369A
Power Transformer (120V, 240V)	300361C
Power Transformer (100V)	300483C
Fan	300003B
Carrying Handle - for Dual - for Single	300346-000 300346-001
Spare Lamp Indicator Light	300370A
Lamp	52-1118
Lamp Cartridge with Lamp	52-1148
Gooseneck Exam Light Kit	52-1232
Multiport Faceplate Assy	52-1182
Nylon Attachment Screw for Multiport	300023A
Sterile Sheath for Gooseneck Exam Light (Pack of 10)	52-1233
Legs - for Dual - for Single	300360
Female Cartridge Connector	300002

(26)

IN-SERVICE TRAINING

The following outline describes the training available from PILLING and can also be used by hospital personnel for conducting in-service training sessions.

DESCRIPTION OF THE ILLUMINATORS (page 3)

1. Point out the location of the five controls and components.
2. Discuss the function of each control and component emphasizing the use of the lamp(s) in the "spare" location.

PREPARING THE ILLUMINATOR FOR USE (page 11)

1. Demonstrate testing the lamps.
2. Demonstrate connecting the fiber optic cables to the multiport faceplate.
3. Demonstrate attaching the sterile sheath to the gooseneck exam light. (Option)
4. Discuss the five system checks to make to be sure the system is ready to use.

OPERATING THE ILLUMINATOR (page 14)

1. Demonstrate turning the power on and adjusting the intensity.
2. Demonstrate switching the lamp cartridge(s) if a burn-out should occur during a procedure.
3. Demonstrate turning the intensity control off and allowing the lamp(s) to cool for 5 minutes before turning the power off.

CUSTOMER MAINTENANCE (page 15)

1. Discuss cleaning the air vents.
2. Demonstrate replacing a lamp, emphasizing the necessity of fan-cooling recently used lamps, proper orientation of the lamp prongs when inserting into the cartridge, and placement of the cartridge in the "spare" location.

Call for additional information and prices—
Outside Pennsylvania, call toll-free: 800/523-6507
Inside Pennsylvania, call toll-free: 800/492-2387
TELEX 671-1330

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